

**Staff Discussion Paper
Entry Level Pelagic Shelf Rockfish Fishery
NMFS Staff: Alaska Region**

Overview

This analysis reviews the potential implications of establishing an entry level rockfish program for jig vessels and longline vessels under 60' length overall (LOA) as part of the GOA rationalization SEIS. This analysis identifies: (1) current harvest levels in the pelagic shelf rockfish (PSR) and Pacific Ocean Perch (POP) fisheries; (2) potential harvests and exvessel values anticipated under the various options; (3) potential levels of participation in an entry level PSR or POP program; and (4) administrative concerns or issues that may need to be addressed.

Summary of Key Issues

1. The PSR and POP fisheries are almost exclusively offshore trawl fisheries, largely prosecuted by the catcher/processor fleet, except in the Central GOA.
2. Existing data do not indicate any significant participation by fixed gear vessels, nor specifically by longline and jig vessels under 60' LOA in either of these fisheries.
3. An entry-level fishery would likely shift effort to nearshore fishing grounds more accessible to the small-boat fleet.
4. Current fishery data indicate that most of the fishery occurs in deeper offshore waters that may be difficult for smaller vessels to effectively exploit.
5. Based on current exvessel values and possible TAC allocation to this entry level fishery it does not appear to offer a substantial economic return.

Pelagic Shelf Rockfish

6. The PSR fishery is not fully utilized, but is well-utilized in the Central GOA.
7. The range of allocations to an entry-level PSR fishery is relatively small and has limited economic value based on current TAC and exvessel price estimates.
8. Establishing an entry level fishery could shift effort into nearshore areas and increase harvests on dark dusky rockfish, yellowtail and widow rockfish, and could affect the bycatch rates on other rockfish species.

Pacific Ocean Perch

9. The POP fishery is fully utilized and an entry-level fishery would reallocate from existing participants.
10. Longline and jig gear may not effectively harvest this species.
11. The range of allocations to an entry level POP fishery are larger and may be more economically viable.

Nature of the PSR Fishery

The pelagic shelf rockfish (PSR) assemblage in the GOA is comprised of three species: dusky rockfish (*Sebastes ciliatus*), yellowtail rockfish (*S. flavidus*), and widow rockfish (*S. entomelas*). Pelagic shelf rockfish can be defined as those species of *Sebastes* that inhabit waters of the continental shelf of the Gulf of Alaska, and that typically exhibit a midwater schooling behavior. Gulfwide, dusky rockfish is the most

important species in the assemblage, whereas yellowtail and widow rockfish are generally considered minor species in Alaska waters. Roughly 99 % of the total harvests in the PSR complex are of dusky rockfish during the 1998-2001 time period (data are not currently available for 2002 harvest composition) (Clausen et al. 2002).

Until 1998, black rockfish (*S. melanops*) and blue rockfish (*S. mystinus*) were also included in the PSR assemblage. However, in April 1998, a GOA Fishery Management Plan amendment went into effect that removed these two species from the federal management plan and transferred their jurisdiction to the State of Alaska. Total harvests in the PSR fishery during the 1995 - 2002 period are shown in **Tables 1 and 2**. The percentage of harvests by gear type during this period are shown in **Table 3**.

Table 1: Harvests in the PSR Fishery by Regulatory Area in Metric Tons

| Year | WG | CG | WY | SEO | Total GOA Harvest | GOA ABC |
|------|-----|-------|-----|-----|-------------------|---------|
| 1995 | 108 | 2,247 | 471 | 64 | 2,891 | 5,190 |
| 1996 | 182 | 1,849 | 190 | 75 | 2,296 | 5,190 |
| 1997 | 96 | 1,959 | 536 | 38 | 2,629 | 5,140 |
| 1998 | 60 | 2,477 | 553 | 22 | 3,113 | 4,880 |
| 1999 | 130 | 3,835 | 672 | 22 | 4,659 | 4,880 |
| 2000 | 190 | 3,074 | 445 | 22 | 3,731 | 5,980 |
| 2001 | 121 | 2,436 | 439 | 12 | 3,008 | 5,980 |
| 2002 | 181 | 2,670 | 448 | 4 | 3,303 | 5,490 |

Notes: (1) Total Harvests prior to 1999 may include harvests of Blue and Black Rockfish which are no longer managed in the PSR complex. (2) Data Source: NMFS Alaska Region.

Table 2: Percentage of TAC Harvested in the PSR Fishery by Regulatory Area

| Year | WG | CG | WY | SEO | EG (WY & SEO) |
|------|-----|------|-----|-----|---------------|
| 1995 | 12% | 50% | | | 50% |
| 1996 | 20% | 58% | | | 25% |
| 1997 | 17% | 55% | | | 58% |
| 1998 | | 76% | -- | -- | 58% |
| 1999 | 25% | 114% | 91% | 9% | |
| 2000 | 35% | 75% | 77% | 3% | |
| 2001 | 22% | 60% | 76% | 2% | |
| 2002 | 36% | 77% | 70% | 1% | |

Notes: (1) Total Harvests prior to 1999 may include harvests of Blue and Black Rockfish which are no longer managed in the PSR complex. (2) Data Source: NMFS Alaska Region.

PSR is typically harvested as a target species assemblage, roughly 99% of all harvests in the Western, Central, and West Yakutat Management Areas during the 1995-2002 period (**Table 3**) are made by trawl gear. Within the fixed gear harvests, roughly 99% of that harvest is by hook and line gear. Although, the PSR fishery is opened for fixed gear on January 1, most of the harvest occurs during the trawl fishery in July. NMFS opens rockfish in July to trawl gear to minimize bycatch of halibut which tend to move further inshore during the summer months and out of the deeper waters where the PSR and other rockfish fisheries occur. The typical pattern for trawl fisheries is to prosecute POP, then Northern Rockfish, and then PSR rockfish. NMFS typically closes the PSR fishery during the summer, usually in late July, along with other rockfish fisheries to ensure that the TAC is not exceeded due to the high catching capacity in the fleet relative to the TAC. NMFS also considers potential bycatch of sablefish and other species in the rockfish assemblage during inseason management. This closure occurs prior to reaching the TAC for PSR. There is no gear split in the GOA between fixed and trawl gear, nor is there a specific allocation between the inshore and offshore sectors. Therefore, longline and jig fisheries are essentially unrestricted in their access to the PSR fishery for roughly six months, and harvests during that time period are very limited.

Based on the relatively limited harvests by fixed gear, this analysis did not estimate the number of vessels by LOA that may have fished for either PSR or POP. Such an analysis would require examining individual fish ticket data and is beyond the scope of this limited analysis. However, a review of existing data indicates that during the 1999 - 2002 time period most of the fixed gear harvests of PSR are from C/P vessels in the Western Gulf and West Yakutat management areas, and from inshore vessels in the Central Gulf. A review of harvest patterns prior to 1999 is difficult because Blue and Black rockfish were managed by NMFS during this time period, and these catch data are not easily distinguished from other PSR species without more detailed analysis. The catch data by sector are not presented here due to potential confidentiality requirements that may exist given the small amount of harvests and the possibility that less than four vessels harvested PSR during this time period in a given management area in a given year. More detailed analysis can be provided at a later date if required.

Table 3: Harvests of PSR by gear group in the WG, CG, and WY Management Areas in Metric Tons

| Year | WG Trawl | WG Fixed Gear | CG Trawl | CG Fixed Gear | WY Trawl | WY Fixed Gear | Average Percentage of WG, CG, WY Harvests by Hook and Line & Jig |
|------|-------------|------------------|-------------|------------------|-------------|------------------|--|
| 1995 | 68 | 40 | 1,827 | 421 | 446 | 90 | 19.1 % |
| 1996 | 71 | 110 | 1,582 | 267 | 180 | 85 | 20.1 % |
| 1997 | 24 | 72 | 1,753 | 206 | 496 | 78 | 13.5 % |
| 1998 | 58 | 1 | 2,394 | 83 | 548 | 27 | 0.4 % |
| 1999 | 128 | 3 | 3,825 | 11 | 667 | 5 | 0.4 % |
| 2000 | 187 | 2 | 3,063 | 11 | 445 | 1 | 0.4% |
| 2001 | 119 | 2 | 2,421 | 14 | 438 | 0 | 0.5% |
| 2002 | 175 | 9 | 2,664 | 16 | 448 | 0 | 0.8% |

Notes: (1) Harvests prior to 1999 may include Blue and Black Rockfish which are no longer managed with the PSR complex. (2) Prior to 1999 there was not a separate allocation of PSR to West Yakutat. (3) The SEO and WY Areas were managed under a single EG TAC. (4) In 1997, the CG PSR fishery was allocated to a nearshore and an offshore TAC. (5) Data Source: NMFS Alaska Region.

The vast majority of harvests in the PSR occur in Federal waters. Analysis by the Alaska Department of Fish and Game (ADF&G) indicates that a small proportion of total harvests occur in the parallel fishery during the period from 1998-2001 (**Table 4**). Several of the most heavily targeted trawling grounds may be 40-60 miles from the nearest port and equally distant from shore. Catches of PSR are concentrated at several offshore banks of the outer continental shelf, especially the “W” grounds west of Yakutat, Portlock Bank northeast of Kodiak Is, and around Albatross Bank south of Kodiak Island and the highest catch-per-unit effort in the commercial fishery is generally at depths of 100-149 m (Clausen et al. 2002).

Most of the dusky rockfish harvested in the trawl fishery is a lighter colored rockfish. However, the North Pacific Groundfish Stock Assessment and Fishery Evaluation Reports (SAFE) report notes that “two distinct species of dusky rockfish likely occur in the Gulf of Alaska: an inshore, shallow water, dark-colored variety; and a lighter-colored variety found in deeper water offshore. No actual reclassification of dusky rockfish has yet been made, but a publication is currently in preparation that will propose the formal separation of the two varieties into distinct species (Clausen et al. 2002).” This reclassification could affect future stock assessments and management strategies.

Total harvests of dark dusky rockfish may be greater within nearshore waters than harvests statistics indicate. The 2002 SAFE report notes that “in past years sizeable portion (perhaps 25%) of the fish reported as ‘black rockfish’ in the Kenai Peninsula jig fishery may have actually been dark dusky rockfish. Dark dusky rockfish and black rockfish often co-occur in nearshore kelp beds of the Gulf of Alaska, and they are superficially similar in appearance, especially in body color, which leads to misidentification.” The total harvests of the dusky rockfish component of the PSR fishery could be higher than current catch statistics indicate if misidentification occurs in other areas of the State during the Blue and Black rockfish fishery. The 2002 SAFE report also notes that once additional confirmation on the taxonomic differences between dark and light dusky rockfish is available it may be appropriate to consider deferring management of that species to the State of Alaska in a separate FMP amendment (Clausen et al., 2002).

Table 4: Pelagic Shelf Rockfish Harvest in Metric Tons from State Waters during the Parallel Fishery.

| Year | WG Trawl | WG Fixed Gear | CG Trawl | CG Fixed Gear |
|------|----------|---------------|----------|---------------|
| 1995 | Conf. | 54.8 | 1.4 | 128.9 |
| 1996 | Conf. | 105.8 | 19.9 | 174.2 |
| 1997 | Conf. | 91.5 | 6.1 | 118.5 |
| 1998 | Conf. | Conf. | 4.5 | 2.4 |
| 1999 | Conf. | Conf. | Conf. | 3.4 |
| 2000 | 0 | Conf. | Conf. | 5.8 |
| 2001 | Conf. | Conf. | Conf. | 10.5 |

Note: (1) Harvests prior to 1999 may include Blue and Black Rockfish which are no longer managed with the PSR complex. (2) Data Source: ADF&G.

It is not clear from the existing data whether a PSR fishery specifically for jig gear and longline vessels under 60' LOA would provide considerably more fishing opportunities than currently exist. Harvest patterns indicate that the fishery is conducted largely offshore by trawl vessels. During the 2002 fishery, 93% of the Western Gulf, 50% of the Central Gulf, and 100% of the West Yakutat PSR fishery was harvested by trawl catcher processor vessels. Traditionally, the Central Gulf is the only region with a substantial portion of the PSR fishery harvested by inshore vessels. A more detailed analysis would provide specific information on the harvest patterns and location of the existing fishery. Based on the available data it does not appear that there is any significant harvests by longline or jig vessels under 60' LOA.

Other factors that would need to be considered prior to establishing an incentive fishery would be the potential effects of a separate allocation on sablefish, halibut, and other rockfish bycatch in a small open-access or incentive fishery. Currently, bycatch in the PSR fishery is most commonly associated with northern rockfish, Pacific ocean perch, and harlequin rockfish. There is no information on the bycatch of pelagic shelf rockfish in non-rockfish fisheries, but it is presumed to be small. Presumably, an allocation of halibut and sablefish bycatch would need to be made to the entry level PSR fishery in order to provide adequate bycatch to prosecute this fishery. The amount of bycatch that might be required was not analyzed.

If a small longline and jig fishery did develop, it may occur in nearshore waters during the summer and halibut bycatch could increase relative to the existing deep water trawl fishery. This could affect the bycatch that may occur in nearshore fisheries, specifically shorttraker, rougheye, and thornyhead rockfish which typically occur closer to shore. Also, it is not clear if modifying the gear types and locations of the PSR fishery would have an impact on the distribution of catch within the PSR complex. As noted earlier, roughly 99% of the PSR assemblage harvests is dusky rockfish. Modifying the gear and location of the PSR fishery could increase harvest rates on yellowtail and widow rockfish. Both of these species appear to be largely limited to the Southeast Outside and West Yakutat management areas based on stock assessment surveys, so an entry-level fishery in the Western or Central Gulf may not result in increased harvests of yellowtail and widow rockfish. Additional monitoring would be needed to ascertain the effects of a small-boat fixed gear fishery on removals from the PSR assemblage.

Dr. David Clausen, principal stock assessment author for the 2002 SAFE Report raised a number of concerns in his review of the proposed entry level fishery, specifically, that light dusky rockfish and POP are plankton feeders typically consuming mostly euphausiids. This may limit the success of using baited hooks to target

these species (D. Clausen pers. comm. 2003). Dr. Clausen notes that the “establishment of a jig or longline fishery for PSR could result in an overharvest of dark dusky or yellowtail rockfish. Both these fish can be caught with hook and lines (D. Clausen pers. comm. 2003).” Dr. Clausen also notes that the State of Alaska is concerned about harvest rates in the blue and black rockfish fishery and additional management measures may not be appropriate until these concerns have been addressed and the taxonomic reclassification of dark dusky rockfish is completed.

Economic factors may affect the viability of an entry-level longline and jig fishery for vessels under 60' LOA. PSR tend to be a relatively low-valued species. Creating a rationalized fishery could improve the handling, marketing opportunities, and the exvessel value that fishermen may receive for their product. The potential increase in value has not been estimated. The entry-level entry level rockfish fishery is not a rationalized fishery, and potential increases in exvessel value may not extend to this fishery. The potential future economic value of this incentive fishery is not known. Current exvessel prices may provide some indication of the possible future value of this fishery. **Table 5** summarizes the possible amount of allocation and value of a PSR entry-level fishery using the 2003 TAC and reported exvessel prices. The average exvessel value per vessel is unknown and potential ranges are not analyzed here.

Table 5: Percentage Allocation to the PSR Entry Level fishery based on 2003 TAC and reported exvessel prices.

| % of TAC Allocated | WG Allocation | WG Est. Exvessel Value | CG Allocation | CG Est. Exvessel Value | WY Allocation | WY Est. Exvessel Value |
|--------------------|---------------|------------------------|---------------|------------------------|---------------|------------------------|
| 3% | 15.3 mt | \$1,700 | 104.4 mt | \$11,500 | 19.2 mt | \$2,100 |
| 5% | 25.5 mt | \$2,800 | 174.0 mt | \$19,100 | 32 mt | \$3,500 |
| 10% | 50.1 mt | \$5,600 | 348.0 mt | \$38,300 | 64 mt | \$7,000 |
| 15% | 75.1 mt | \$8,400 | 522 mt | \$57,500 | 96 mt | \$10,500 |

Notes: (1) Estimated Exvessel value is based on an exvessel price of \$0.05/pound. Actual exvessel values in specific ports or from specific processors may differ.

Nature of the POP Fishery

Unlike the PSR fishery, the POP fishery is fully utilized (**Table 6 and 7**). Allocating a percentage of TAC to an entry-level fishery would be a reallocation away from existing participants. The POP fishery is typically targeted before the PSR fishery. However, there are only minimal harvests by non-trawl vessels. Over the past several years, more than 99.9% of all harvests were by trawl vessels based in an analysis of existing data. POP is harvested in offshore regions, almost exclusively within Federal waters other than a small amount of catch within the parallel fishery in some of the past seven years. These data cannot be reported due to confidentiality requirements established by the State of Alaska. During the 2002 fishery, 98% of the Western Gulf, 42% of the Central Gulf, and 99% of the West Yakutat POP fishery was harvested by trawl catcher processor vessels. Traditionally, the Central Gulf is the only region with a substantial portion of the POP fishery harvested by inshore vessels. As with the PSR fishery, the allocation to an entry-level fishery could have limited economic value (**Table 8**).

Table 6: Harvests in the POP Fishery by Regulatory Area in Metric Tons

| Year | WG | CG | WY | EG (WY & SEO) | WG, CG, WY | GOA TAC (w/o SEO) |
|------|-------|-------|-----|---------------|------------|-------------------|
| 1995 | 1,422 | 2,598 | -- | 1,722 | 5,742 | 5,556 |
| 1996 | 987 | 5,145 | -- | 2,246 | 8,378 | 6,959 |
| 1997 | 1,832 | 6,720 | -- | 979 | 9,531 | 9,190 |
| 1998 | 846 | 7,452 | | 610 | 8,908 | 10,776 |
| 1999 | 1,935 | 7,910 | 627 | -- | 10,472 | 9,430 |
| 2000 | 1,160 | 8,379 | 616 | -- | 10,155 | 11,320 |
| 2001 | 944 | 9,249 | 623 | -- | 10,816 | 11,760 |
| 2002 | 2,723 | 8,262 | 748 | -- | 11,733 | 11,610 |

Note: Harvests prior to 1999, include allocations to the SEO management area. Data Source: NMFS

Table 7: Percentage of TAC Harvested in the POP Fishery by Regulatory Area

| Year | WG | CG | WY | SEO | EG (WY & SEO) |
|------|------|------|-----|-----|---------------|
| 1995 | 140% | 96% | | | 90% |
| 1996 | 78% | 154% | | | 95% |
| 1997 | 124% | 126% | | | 41% |
| 1998 | 47% | 113% | | | 26% |
| 1999 | 105% | 117% | 76% | 0% | |
| 2000 | 94% | 91% | 73% | 0% | |
| 2001 | 74% | 96% | 72% | 0% | |
| 2002 | 104% | 101% | 96% | 0% | |

Note: (1) Harvests prior to 1999, include allocations to the SEO management area. Data Source: NMFS

Table 8: Percentage Allocation to the POP Entry Level fishery based on 2003 TAC and reported exvessel prices.

| % of TAC Allocated | WG Allocation | WG Est. Exvessel Value | CG Allocation | CG Est. Exvessel Value | WY Allocation | WY Est. Exvessel Value |
|--------------------|---------------|------------------------|---------------|------------------------|---------------|------------------------|
| 3% | 81 mt | \$9,000 | 255 mt | \$28,000 | 24 mt | \$3,000 |
| 5% | 130 mt | \$14,000 | 426 mt | \$47,000 | 41 mt | \$4,500 |
| 10% | 270 mt | \$30,000 | 851 mt | \$94,000 | 81 mt | \$9,000 |
| 15% | 400 mt | \$44,000 | 1277 mt | \$141,000 | 122 mt | \$13,500 |

Notes: (1) Estimated Exvessel value is based on an exvessel price of \$0.05/pound. Actual exvessel values in specific ports or from specific processors may differ.

Management of an Entry-Level Rockfish Fishery

If an entry-level fishery is established, then those vessels which are also eligible to fish in the rationalized harvest share fishery, could also fish in this incentive fishery unless those vessels are explicitly excluded. If “rationalized” vessels participate in both the entry-level and the rationalized fishery, this could undermine the goals of the entry-level fishery and create a race for fish among rationalized vessels as they target the entry-level fishery first before using their harvest share allocation. This could have an effect on bycatch of other rockfish species, sablefish, and possibly halibut. NMFS would have to establish an adequate bycatch allowance for the entry-level fishery. The allocation of bycatch to this fishery could affect the available bycatch in the rationalized PSR and/or POP fisheries.

To exclude vessels from the entry level fishery, NMFS would establish regulations forbidding any vessel that is used in a rationalized PSR fishery from fishing in the entry-level fishery. “Use” would need to be defined as the use of that vessel or any quota share deriving from that vessel. Conceivably, vessels which sold their PSR and/or POP harvest share would be eligible to participate in the entry-level fishery. Alternatively, NMFS could establish regulations that explicitly exclude all vessels that use harvest share in any fishery from participating in the PSR fishery. This would more strictly limit potential participation in this fishery. If participation in an entry-level fishery is limited to vessels not participating in the rationalized fishery, it may be unduly restrictive. Currently, there is very limited participation by jig gear or longline vessels under 60' LOA. Based on historical harvest patterns, it is not clear that small-boat fixed gear vessels would target the PSR or POP fisheries. The depth and location where these fisheries occur may limit participation further. Additionally, since the PSR and POP fisheries typically occur exclusively within Federal waters only those vessels with a valid LLP would be eligible to participate, unless Federal LLP requirements were modified.

Monitoring a limited entry-level fishery could prove problematic because some of the vessels that would be fishing in this fishery are currently unobserved under existing regulations (i.e., vessels under 60' LOA), and catch reporting would be limited to fish ticket data on landings, or weekly production reports from processors. Requiring onboard observers would likely prove uneconomical for the fleet given the estimated relatively low value of the fisheries. These data monitoring limitations reduce the ability of NMFS to effectively manage the fishery in “real time”. If the harvest rates are relatively limited, and the quota allocation is sufficiently large, then it may be possible to effectively manage this fishery using existing landing data. The potential harvest rate in an entry-level is unknown, and would vary with the number of vessels participating.

If the entry-level allocation is small and harvest rates are high, a more restrictive management system would need to be used. This could include keeping the fishery closed if the harvest rates were too high relative to the accuracy of the available monitoring tools. If the fleet exceeded the entry-level allocation it could result in a reduced allocation in the following year. If the entry-level allocation was exceeded and the combined entry-level and rationalized fishery harvests would exceed the ABC, then NMFS may need to take inseason management measures to restrict the rationalized fishery harvests. This could include reducing the amount of IFQ per QS to ensure that total harvests were maintained below the TAC, or closing the rationalized fishery to avoid exceeding the ABC. The TAC has been set at the same level as the ABC for PSR and POP. The gap between the TAC/ABC and the Overfishing Level (OFL) for these species is relatively “tight” compared to other groundfish stocks (e.g., Pacific cod) and inseason management of the entry-level fishery would need to ensure that the overall TAC/ABC is not exceeded. **Table 9** shows the TAC, ABC, and the OFL for PSR and POP based on the 2003 harvest specifications. The POP OFL is roughly 15% greater than the TAC/ABC and inseason management of an entry level fishery for this species would need to be particularly conservative to ensure the ABC and OFL are not exceeded.

Table 9: TAC, ABC, and OFL for Pelagic Shelf Rockfish and Pacific Ocean Perch based on 2003 Harvest Specifications

| Species | Regulatory Area | TAC | ABC | OFL |
|---------|-----------------|-------|-------|--------|
| PSR | WG | 510 | 510 | |
| | CG | 3,480 | 3,480 | |
| | WY | 640 | 640 | |
| | GOA | 5,490 | 5,490 | 8,220 |
| POP | WG | 2,700 | 2,700 | 3,220 |
| | CG | 8,510 | 8,510 | 10,120 |
| | WY | 810 | 810 | |
| | EGOA (WY & SEO) | 2,450 | 2,450 | 2,900 |

An additional management concern is the taxonomic uncertainty over dark dusky rockfish. As noted earlier, some of the species identified as black rockfish may in fact be dark dusky rockfish, possibly a separate subspecies or species from dusky rockfish. Establishing an entry-level fishery could target the nearshore component of dusky rockfish which appear to be more typically composed of dark dusky rockfish. Redirecting a portion of the PSR fishery to nearshore waters could have unknown effects on a potentially distinct component of the dusky rockfish biomass. The potential effect of this shift is unknown without additional research. An entry-level fishery would effectively reallocate a portion of the fishery to longline and jig gear. This could redistribute effort to the other components of the PSR complex -- yellowtail and widow rockfish, or increase bycatch rates on other rockfish species, or halibut. Equally unknown are the potential effects on benthic habitat of increasing longline effort in nearshore areas.

An incentive fishery, on relatively small quotas by unobserved vessels using landing data for inseason management is imprecise, and could result in overages. Finally, given the already complex management system envisioned for GOA Rationalization, an additional entry-level fishery increases the overall administrative burden of NMFS and is likely to provide limited additional economic opportunity for small boat fishermen. Further development of this component of the rationalization program could redirect staff effort away from other components of GOA rationalization.

Literature Cited

Clausen, David M, Chris R. Lunsford, and Jeffrey T. Fujioka. 2002. Pelagic Shelf Rockfish, Stock Assessment and Fishery Evaluation Reports, NMFS AFSC.

Clausen, David, M. 2003. Personal communication via email. May 20, 2003.